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Descriptions of some new species of AGROTIS Auct.

BY JOHN B. SMITH.

Agrotis abnormis sp. nov.—The general color is carneous gray, variably shaded or suffused with a more reddish tint. Palpi brown at sides; a broad blackish transverse band at base of collar. Primaries with basal line present, geminate, black, dentate. T. a. line geminate brown or blackish, the inner line faint, included space paler in dark specimens, concolorous in pale examples; upright, outwardly angulate below costa, in the submedian interspace, and again below the internal vein. T. p. line single, or with the outer part of geminate line indicated only by a dusky costal spot and a short dusky shade, its course outcurved over, and very close to reniform, then very evenly parallel to outer margin. S. t. line very slightly paler, outwardly angulated on veins 3 and 6, emphasized by a distinct dusky preceding shade, which in pale specimens sometimes becomes the most prominent feature. A narrow, interrupted, dark terminal line. Claviform very faintly indicated by a few dark scales. Orbicular well sized, oval, oblique, sometimes not completely defined posteriorly, narrowly black ringed, concolorous in pale specimens, paler in darker examples. Reniform narrowly black ringed, of the gray ground color with a more leaden gray filling, prominent inferiorly. Secondaries of the usual dirty gray-brown, somewhat paler in the male, discal spot evident. Beneath powdery fuscous, paler in the male, with distinct, though sometimes interrupted outer line and an evident discal spot on all wings. Expands 1.37—1.50 inches; 34—37 mm.

Habitat.—Sierra Nevada, Cal. (McGlashan).

The structural characters are: fore tibiæ armed, clypeus tuberculate, antennæ of male simple, ciliate; abdomen not depressed. The present species is the only one under this catagory in which the normal Noctuid maculation is present without longitudinal strigæ, and the species really seems at first sight allied to some of the *tessellata* group. The genital structure is not, however, typical of that group, the short branch of the clasper being absent. The simply ciliate, scarcely serrate male antennæ are unusual associates for the other characters.

Several specimens; types with Mr. Edwards and in the college collection.

Agrotis erratica sp. nov.—General color dull ashen gray to brick red, smooth and dense in appearance. Palpi dark at side. Head and thorax immaculate. Primaries very evenly clothed, the lines not much darker and not prominently relieved. Basal line indistinct geminate. T. a. line geminate, the lines very narrow, faint, outwardly oblique, not very much angulated. T. p. line rather regularly outcurved, geminate, inner line narrow, broken below vein 3; outer

line punctiform. S. t. line pale, very slightly less so than ground color, relieved by a dusky preceding line, and a general dusky coloring of the terminal space; its course very slightly irregular. In the reddish forms the transverse lines are almost entirely obsolete. Claviform wanting. Ordinary spots evenly dark filled, with a narrow defining line, small in size. Orbicular slightly oval, oblique; reniform rather narrow, upright, very slightly constricted. Secondaries glistening, smoky fuscous, somewhat paler basally. Beneath pale, powdery fuscous, with a darker outer line and discal spot. Expands 1.36—1.50 inches; 34—37 mm.

Habitat.—Sierra Nevada, Cal. (McGlashan), Calif. (Neumoegen).

This species is very distinct from any other known to me by the peculiar association of structural characters, combining the habitus of the *cupida* group with the antennæ, but not frontal characteristics of the *pitychrous* section, and peculiar and different from all by the distinct ridge or crest to the thorax. In this feature it resembles *Glœa* or allies, but the form is not depressed. It will probably form a new generic type characterized by smooth front, palpi with second joint clavate, third joint minute, forming a short snout with the frontal vestiture; anterior tibia unarmed, middle and posterior spinose, thorax with vestiture smooth, consisting of flattened hair and scales, with a distinct crest anteriorly. The genital structure is not unlike that of the *cupida* group, and the insect is not unlike *cupidissima* in character. The thoracic crest is perfect in but one specimen before me.

Types are in collection Rutgers College, coll. Hy. Edwards, and coll. B. Neumoegen.

Agrotis planifrons sp. nov.—General color a bluish ash-gray; sides of palpi blackish; collar black tipped; thorax immaculate. Primaries with a distinct vinous red shade through the lower half of the wing, less marked in the basal and terminal spaces. Basal line single, black, strongly dentate, running to the basal dash. T. a. line single, broader on costa and internal margin, strongly dentate between veins, slightly oblique outwardly. T. p. line broad, distinct, crenulate, outwardly curved over reniform, and inwardly sinuate below, the curves very even and not strong. A broad, diffuse, median shade crosses the reniform, then runs parallel and rather close to t. p. line, darkening the median space beyond, to the t. p. line. S. t. space becoming gradually darker to the s. t. line, which is defined and limited only by the contrast of this dark shade against the concolorous terminal space. A row of black terminal lunules. A black longitudinal dash at base extending to t. a. line. Claviform wanting. Orbicular concolorous, black ringed, elongate, the ends drawn out, the one reaching the t. a. line the other to the reniform, which is narrow, lunate, incompletely defined, darkened by the transverse median shade. Secondaries white, veins a trifle soiled, and with a dirty indefinitely marked outer border. Beneath, primaries fuscous, powdery, paler costally where the outer transverse line is visible; secondaries paler, more powdery, with outer line marked across costal space only; a distinct discal spot. Expands 1.37 inches; 34 mm.

Habitat.—N. W. British Columbia.

A single specimen only, from Mr. Neumoegen, in good condition; the combination of structural characters is peculiar to this species and to *congrua*. The front is flat, the palpi short, second joint very broad at tip, terminal joint minute, as a whole resembling the *cupida* group. Fore tibia spinose, but not very heavily armed and scarcely abbreviated. Antennæ with the joints marked, laterally furnished with tufts of hair resembling thoee of the *pitychrous* and *messoria* groups, but not so well developed; vestiture of flattened hair and scales; thorax with an indefinite anterior divided crest; the maculation is also distinctive, and as a whole the species is intermediate between the forms like *tessellata* and *saucia*, forming a distinct group. The species is very handsome as well as unique.

Agrotis congrua sp. nov.—Ashen gray, palpi dark at the sides; collar with a narrow, dark, transverse line, above which is a series of white scales, the tip of collar marked with a reddish, almost ferruginous shade. Thorax immaculate. Primaries with a somewhat ferruginous shade extending through the middle of the wing into the s. t. space and tinting that space nearly its full length; veins somewhat dark marked. Basal line marked on costa only. T. a. line single, marked by a distinct costal spot, from which the line is traceable through the cell, twice dentate in this course, then not again visible, except as a curved mark below the internal vein. T. p. line traceable for its entire length, single, not prominent, rather even, with little outward spurs on the veins. S. t. line indefinite, paler, interrupted, marked by the slight contrast between terminal and s. t. space created by the rusty tinging of the latter. A row of dusky terminal lunules; no basal dash, no claviform. Orbicular elongate, black ringed, connected with the reniform by a short spur-line; reniform incomplete, indefinite, the inner outline only defined. Secondaries whitish, glistening with the veins dusky and with a faint discal lunule. Beneath whitish, powdery, with a diffuse outer line on each wing visible only across the costal region. Expands 1.36 inches; 33 mm.

Habitat.—Oregon.

A single male in good condition is before me. The species agrees perfectly with *planifrons* in the group characters, and is closely allied to that species in general type of maculation. There are so many differential characters, however, that there is not the slightest danger of confusing them.

Agrotis inelegans sp. nov.—General color dull blackish brown Head and palpi concolorous; collar with a reddish suffusion, more marked at the tip and extending to base of costa of primaries; thorax with base of patagiæ and the tips of the small anterior and posterior tufts, also more reddish and slightly contrasting. Primaries with a slight reddish shading basally along costa, else quite uniform, save that the median space is a trifle darker than the rest of the wing. Basal line geminate, black, distinct. T. a. line geminate, blackish, dis-

tinct, outwardly oblique and quite even; a small outward curve only in the interspaces. T. p. line marked by a geminate black spot on the costa, thence indicated only by the slight contrast between median and subterminal space; outwardly well curved over the reniform, and somewhat incurved below. S. t. line prominent, a narrow, slightly irregular line of yellowish white scales scarcely interrupted save toward costa and inner margin. Claviform faintly marked. Ordinary spots moderate in size, normal in form, concolorous, outlined by a narrow line of pale scales surrounding each. Secondaries and abdomen smoky fuscous. Beneath fuscous, powdery, with a reddish shading, more marked on secondaries; an outer, interrupted, transverse line and a discal spot on secondaries only. Expands 1.25 inches; 31 mm.

Habitat.—Sierra Nevada, Cal. (McGlashan).

In structural characters this species is nearest to *mirabilis* in the *cupida* group; front smooth, palpi short, scarcely forming a snout as in *cupida*, fore tarsi not spinose; thorax with a small anterior and posterior divided crest, abdomen depressed. It is an intermediate form between the *cupida*, *exsertistigma* and *stellaris* groups, with the wing form of the former, the tufting of the second, and the maculation of the third. Its best place is probably next to *mirabilis*.

A single female in good condition is before me.

Agrotis clemens sp. nov.—Pale luteous gray, with black powderings, the vestiture smooth, glistening. Head, collar and thorax concolorous, immaculate. Basal line distinct, geminate, black. T. a. line geminate, outer line broader, more distinct, the lines irregular, and as a whole the line irregularly outcurved and bent in the interspaces. T. p. line distinctly geminate, interrupted, the inner line consisting of a series of irregular lunate spots; outer line an almost evenly curved series of distinct venular dots. S. t. line pale, very slightly and irregularly sinuate, the line marked by a distinct, dusky preceding shade. A series of blackish terminal dots. A diffuse median shade darkens the cell between the ordinary spots and is continued vaguely to the hind margin, varying in distinctness. Claviform wanting; the ordinary spots are vague, indefinite, of a very slightly paler shade than the ground color; the reniform marked with dusky. Secondaries pale smoky, somewhat whitish, the veins fuscous. Beneath whitish, powdery, with an outer line and discal spot to all wings. Expands 1.50—1.65 inches; 38—41 mm.

Habitat.—California (Neumoegen).

The specimens before me are all females, and show all the characteristic features of the *clandestina* group of the genus. The species has no close allies in the group, and while evidently referable near to *clandestina* and *havilæ* in the table, is in some respects rather intermediate between the type of the group and *haruspica*. The abdomen of the ♀ is not depressed; there is some resemblance to *pyrophiloides* in the habitus, which, however, is not likely to prove misleading.

S. volubilis Harv.

A number of specimens of this species were in the collection, so different from the general run of specimens that I applied the name *dentilinea* to the form. Compared with ordinary specimens of the eastern or western forms the maculation is much more distinct, the colors brighter and the s. t. line very prominently dentate. It may be that this form, which is also narrower winged than type forms of *volubilis*, will eventually prove distinct, but I have no specimens at hand sufficient to determine this at present; *stigmosa* refers to the same form as *volubilis*.

Agrotis satiens sp. nov.—General color luteous gray, palpi brown at sides, head and thorax else immaculate. Primaries black powdered, irrorate, the ordinary maculation confused and indefinite. Basal line black, interrupted, geminate, always marked on costa at least. T. a. line marked by a geminate black costal dot and very indefinite below this, but as a whole outwardly oblique. T. p. line geminate, inner line crenulate, not very well marked, outer line a series of venular dots variably distinct; as a whole its course very even. Beyond its middle the s. t. space begins to darken to the outer margin, the terminal space being much darker than ground color, almost blackish; through this dark space the s. t. line is distinct as a series of large pale spots not much paler than ordinary ground color. A series of black terminal spots; a vague indication of a basal dash. Claviform moderate, concolorous, black marked, but not completely defined. Orbicular oval, elongate, quite variable in size, black marked, then with a pale annulus, centre concolorous or very little darker than ground color. Reniform large, kidney shaped, very indefinitely and quite incompletely outlined; concolorous. In some specimens the cell is distinctly black before orbicular and between that and the reniform. Secondaries in the ♂ pearly white, in the ♀ darker, outwardly smoky, veins dark marked, fringes white. Beneath white, with black powderings, without lines in the ♂, with an incomplete outer line and discal spot to all wings in the ♀. Expands 1.38—1.52 inches: 34—38 mm.

Habitat.—N. W. British Columbia; 1 ♂ 2 ♀ ♀.

In all structural characters this insect is nearest to *obesula* m., but has not the plump, heavy look so striking in that species; the ground color here is paler and much more irregularly marked than in *obesula* where the dark atoms are regularly distributed. The antennæ are as in *murœnula* rather than *obesula*, the latter having them unusually heavy.

A. insertans sp. nov.—General color a rather sordid yellow. Head and palpi immaculate, collar with a distinct black central line above which the color is somewhat more dusky. Thorax with black scales intermixed, forming an incomplete line margining the patagiæ. Primaries with the median lines practically obsolete, the t. a. line traceable only by a single loop below the claviform and the t. p. line marked only by geminate costal dots. A basal black streak, to

which is attached the loop-like claviform. The cell is black around and between the ordinary spots, which are connected; an unbroken black line margining both. Orbicular elongate, with a slightly darker core; a narrow spur extending to the reniform, which is moderate in size and kidney shaped. A black spot below reniform. The s. t. and terminal spaces are prominently marked by the four pale streaks so characteristic of the 4-*dentata* series of this genus; the black intermediate dashes distinct; no distinct s. t. line. Secondaries clear, pure white. Beneath white, somewhat powdery, without line or spot. Expands 1.32 inches; 33 mm.

Habitat.—British Columbia, Spencer's Bridge.

The type is a unique male from Mr. Neumoegen; easily distinguished from its allies in the 4-*dentata* group by the pure white secondaries, the united ordinary spots and elongate orbicular; a combination shared by no other species. The genitalia are of the bifurcate type usual in the group to which the species is referred.

Agrotis cogitans sp. nov.—General color ashen gray with a slight luteous tint. Head and thorax unicolorous; collar with a median transverse black line. Primaries in some specimens with fine blackish powderings, usually very even and smoothly colored without shadings or contrasts of any kind. Basal line in a fully marked specimen geminate, distinct on costa and traceable to the basal dash; in other specimens it is entirely obsolete. T. a. line geminate, the two lines equally distinct, strongly oblique outwardly and outcurved in the interspaces; sometimes almost entirely obsolete. T. p. line single, fine, crenulate, strongly outcurved over cell, and then almost parallel with the outer margin; in some specimens nearly obsolete, but generally traceable. S. t. line usually entirely wanting, rarely indicated by a vague dusky shading. A series of black terminal lunules. A distinct narrow longitudinal basal line to the t. a. line, beyond which the claviform is more or less indefinitely marked with a few black scales. Orbicular concolorous, slightly ovate, usually distinctly outlined in black sometimes with a preceding black line, sometimes with a narrow line connecting it with the reniform. The reniform is inwardly well defined by a curved black line, outwardly vague and indefinite, but usually traceable. Secondaries in the male pearly with a smoky tinge; in the female somewhat darker. Beneath white, powdery, with a variably distinct outer line and discal spot to all wings. Expands 1.50—1.75 inches; 38—44 mm.

Habitat.—California (Neumoegen).

Four specimens ♂ and ♀ are before me, no two of which are alike and which yet vary very slightly. The transverse lines are more or less obsolete and the concolorous ordinary spots with their narrow black outline and marking are somewhat variable in shape and in their relations to each other. In structural characters the species agrees with that section of the *pityochrous* group of which *hollemani* is a member. In type of marking there is a curious re-

semblance to *clandestina*, but the coloration and wing form are quite different. The thoracic tufting is not distinct, but is well indicated, the vestiture being rather loose.

Agrotis atomaris sp. nov.--Head, thorax and primaries deep smoky or blackish brown. Palpi darker at sides, collar with a tip of luteous scales, thoracic crest with an admixture of hoary scales. Primaries with a luteous shading through the centre of the wing. All the maculation obscure, indistinct, yet all traceable. Basal line marked on costa only by a geminate black spot. T. a. line geminate, sometimes traceable through the cell, somewhat outcurved between veins and with a long outcurve below the internal vein. T. p. line geminate, marked on costa, evenly outcurved over reniform, inner line finely crenulate, outer scarcely marked, except by the slightly paler included shade. S. t. line paler, interrupted, sometimes almost obsolete. Claviform present, outlined in black. Orbicular round, moderate in size, very indistinctly outlined. Reniform rather large, normal in form, slightly more leaden black, not very definitely outlined. Secondaries (♂) pure white, a narrow dusky marginal line. Beneath white, powdery, with an interrupted outer line and discal spot to all wings. Expands 1.25 inches; 31—35 mm.

Habitat.—California (Neumoegen).

The structural characters refer this species to the *pityochrous* group, and most nearly to *velleripennis*. From this latter species our form differs in the somewhat lighter shade of the wings, rather more luteous than black, while the ordinary spots are not so neatly outlined, and the transverse maculation is rather more distinct. Three males are before me, all very much alike. There is a chance that this may eventually prove identical with *velleripennis*, but I doubt it.

Agrotis remota sp. nov.--General color a pale, carneous gray. Palpi blackish at sides, else head and thorax immaculate, concolorous. Primaries with a reddish suffusion apparent in the median space, and the terminal space dusky. Basal line geminate, distinct, brown. T. a. line geminate, incomplete, slightly outcurved in the interspaces. T. p. line indistinctly geminate, as a whole well exserted over the reniform and thence rather evenly oblique to the inner margin; inner part of line fine, crenulate, outer line represented by venular dots distinct only below vein 5. S. t. line indefinite, irregular, forming an outward curve on veins 3–5, and again near apex; relieved by the dark terminal space. Claviform small, concolorous, incompletely outlined. Ordinary spots paler ashen gray; orbicular outlined in black, oblique, somewhat irregular oval. Reniform large, kidney shaped, narrowly pale lined, incompletely outlined inferiorly, outwardly with a pale, more yellowish blotch. A very narrow, interrupted, terminal line. There is a slightly deeper shade of reddish between the ordinary spots, but nothing like a distinct dark shading. Secondaries soiled whitish, with a

darker outer margin. Beneath, primaries fuscous, with paler powdery outer and costal border, Secondaries paler, powdery, with an incomplete outer line and a diffuse discal spot. Expands 1.40 inches; 35 mm.

Habitat.—Sierra Nevada, Cal. (McGlashan).

This species has all the essential characters of the *pityochrous* group, and is perhaps nearest to *choris*, but quite distinct from it. The maculation so far as the ordinary spots are concerned is more distinct than any other of the *pityochrous* group, and in that respect approaches somewhat the *tessellata* group, without, however, in the specimens before me raising any question of the proper group to which it should be referred. The genitalia of the male are in all essentials like those of *pityochrous*.

Agrotis annulipes sp. nov.—General color ashen-gray with a reddish shade, with blackish powderings. Palpi darker at sides, head somewhat pallid in front, collar with a very vague transverse line composed of dark powderings. Thorax evenly and not heavily powdered. Primaries with the dark powderings becoming more prominent outwardly, slightly suffusing the outer part of median space and becoming most prominent as a heavy smoky brown shade before the s. t. line; the terminal space dusky, but not so dark as the outer part of s. t. space. Basal line apparently single, brown, not very distinctly marked. T. a. line geminate, evenly outcurved, slightly irregular; the outer part of the line is distinct, brown, rather broad, the inner vague, not well marked superiorly, but easily traced through the lower part of its course. Median shade very distinct, brown, rather definitely limited, very nearly parallel with the t. a. line. T. p. line distinctly geminate, rather widely outcurved over reniform and slightly incurved below; inner line distinctly crenulate, outer line somewhat vague, except through costal region. S. t. line pale, somewhat diffuse and very even, starting from the pale apical space. Claviform wanting. Orbicular and reniform slightly paler, not outlined, very vague and indefinite, at first sight apparently wanting. Secondaries smoky whitish, somewhat iridescent. Beneath whitish, powdery; primaries darkest and with trace of an outer line; secondaries more powdery along costa and without outer line or discal spot. Expands 1.16 inches; 29 mm.

Habitat.—Oregon.

A very distinct species of which I have only one ♀ specimen in good condition. It has all the characters of the *messoria* group, and according to the tabular arrangement comes nearest to *brunneigera*. It is, however, decidely smaller than that species, and the color is more gray; the prominent median shade and the dusky terminal parts of the wing are distinctive. The tarsi are ringed with brown, the legs also of the same grayish white as the underside.

Agrotis murdocki sp nov.—Head and thorax a rather bright yellowish red, almost ferruginous, without mark or spot. Primaries with basal and subterminal space of the same red-brown color as thorax. Median space bright bluish gray, outwardly dark shaded. Terminal space dusky. Basal line faintly marked. T. a. line geminate, very even, with an even, rather small outward curve; inner line brown, outer line broader, black. T. p. line geminate, even, outwardly curved over reniform, slightly incurved beneath; inner line black, distinct, outer line indefinite, incomplete, brown. S. t. line marked by the contrast between the evenly dark terminal space and pale s. t. space, its course irregular. A dusky costal shade in s. t. space before apex, leaving a paler apical spot. A pale line at base of fringes Claviform wanting. Orbicular large, round concolorous, faintly outlined by a pale ring. Reniform large, kidney shaped, inferiorly dark filled, obscured by the median shade which crosses the spot and then runs rather diffusely and close to the t. p. line, darkening the outer part of median space. Cell between the spots also dusky. Secondaries whitish, soiled, with a faint reddish suffusion. Beneath pale, powdery, disc of primaries darker; an outer line and discal dot to all wings. Expands 1.20 inch.; 30 mm.

Habitat.—N. W. British Columbia, Utah Territory.

This very handsome species is readily recognized among its congeners by the strong contrast between the blue-gray median and reddish yellow or rusty red basal and s. t. spaces. It has all the characters of the *messoria* group, but is unique among them all. The specimen now before me is from Mr. Neumoegen. I received it some time since from Mr. Edwards, who had it, I think, from Utah. Some years since I received the first specimen from Capt. Murdock, Fort Thornburgh, Utah, and this specimen is now in the United States National Museum. From Capt. Murdock I received many good species, and it is matter for extreme regret that so good a collector in so fine a locality should have lost his life so soon.

Agrotis quinquelinea sp. nov.—General color fuscous gray. Head concolorous; collar with a central dusky line; thorax concolorous. Primaries evenly colored, the transverse lines blackish. Basal line distinct, single. T. a. line distinct, upright very slightly angulate; median shade line distinct, broad, very irregular. T. p. line single, narrow, crenulate, its course as a whole very nearly parallel to the outer margin. S. t. line consisting of a narrow dark shade line followed by some pale scales relieving and defining the same; an interrupted, very narrow terminal line. Secondaries and abdomen pale smoky fuscous. Claviform wanting, ordinary spots barely traceable, concolorous, reniform inwardly marked by a small black dot. Beneath pale, powdery fuscous, with an outer line and discal spot on all wings. Expands 1 40 inches; 35 mm.

Habitat.—Sierra Nevada, Cal. (McGlashan).

This simply marked species is allied in appearance to the Alpine forms *tristicula* or *fusca* with the characters referring it to the group *messoria* so far as they can be made out from the single female before

me. Front mucronate, anterior tibiæ armed, median shade distinct. Its closest ally is perhaps *incallida*, from which the simple lines separate it at a glance. The legs, too, are not banded as in the other species, and there are numerous other distinctive features.

Agrotis incallida sp. nov.—General color pale ashen gray. Palpi brown at sides; a dusky line across the front; collar dark tipped. Thorax unicolored, concolorous. Primaries with slightly darker suffusion beyond the median shade. Basal line geminate, black, upright, lunulate, the outer line broad, the inner narrower and fainter. A broad, black median shade, somewhat diffuse outwardly. T. p. line black, lunulate, geminate, the outer line distinct near costa only, a strong outcurve over the reniform and a slight incurve in the submedian interspace. S. t. line irregular, interrupted, pale, marked by a very distinct smoky preceding, and a somewhat less evident following shade. Claviform wanting, orbicular barely traceable, concolorous; reniform marked only by an indefinite dusky spot. Secondaries deep smoky brown. Beneath very dark smoky brown, with white powderings along the costa, broader on secondaries. A broad diffuse outer band, distinct only through the paler parts of the wing; secondaries with a discal spot. Vestiture of breast ash-gray, tarsi and tibiæ black ringed. Expands 1.5 inches; 37 mm.

Habitat.—Sierra Nevada, Cal.

The structural characters as far as they are ascertainable from the single female before me, are like the *messoria* group. The fore tibiæ are spinose, the clypeus is mucronate, and the maculation is like that of *extranea* and *trifasciata*, from which the color and the want of distinct ordinary spots separate this species. The appearance and habitus at first refer to *opipera*, *munis* and *dissona*, but all of these afford distinctive characters, leaving the color and general appearance responsible for the impression. It is perhaps closer to the Alpine *simplonia* than any of our own species.

Agrotis lutulenta sp. nov.—General color a luteous gray; sides of palpi dusky, a dusky line extending from the eyes to the base of primaries; head and thorax else immaculate. Primaries slightly blackish powdered, more distinct along the inner margin, and darkening the terminal and outer part of s. t. space. Basal line geminate, not well marked. T. a. line geminate, outwardly slightly oblique, moderately outcurved in the interspaces, a long outcurve below internal vein; inner part of line obsolete, outer very distinct. T. p. line narrow, crenulated, parallel with the outer margin, inferiorly becoming indefinite; outer part of line marked only near costa and not continued as a series of venular dots. Median shade indefinite, diffuse, best marked between the ordinary spots, and with some difficulty traceable below. Beyond the t. p. line the s. t. space darkens to the outer margin interrupted by the very fine, pale, irregular and partly obsolete s. t. line. No dark terminal line or lunules, a pale yellow line at base of fringes. Claviform wanting. Orbicular round, pale ringed, not prominent, scarcely even distinct. Reniform large, very vague, not outlined, marked by a yellowish curved line, which constitutes the outer margining line, and by a

slight lateral extension of the median shade. Secondaries smoky fuscous, outwardly somewhat darker. Beneath paler, more whitish, powdery, with an outer line and discal spot on all wings; primaries with disc fuscous and outer line incomplete. Expands 1.37 inches; 34 mm.

Habitat.—Sierra Nevada, Cal. (McGlashan).

Very closely allied to *brunneigera* Grote, with which it agrees in all structural characters and in the ornamental characters determining its reference to the *messoria* group. It differs in the pale ground color, the greater size of the ordinary spots and the distinct outer shade combined with the partly obsolete s. t. line.

Types, a male in the Rutgers College collection; others in collection Hy. Edwards.

Agrotis alticola sp. nov.—General color a mixture of red and clay yellow, varying to a definite bright red-brown or deep brick-red. Collar with a dusky central line not apparent in dark specimens. Primaries always with a darker shade before the s. t. line, and usually the terminal space also is darker. In fully marked specimens the maculation is as follows: basal line geminate, indistinct, included space paler than ground color; t. a. line geminate, slightly oblique, strongly outcurved between veins, included space paler; t. p. line very even, parallel with outer margin, geminate, inner line crenulate, fine, included space pale, outer line vague, often wanting; from this point the s. t. space usually begins to darken to the pale s. t. line, which is very irregular, sinuate, outwardly curved over veins 3–4, and again over veins 6–8, intervening inward angle quite sharp. Claviform wanting; orbicular round, or a trifle oblique, pale ringed, with concolorous, or somewhat paler centre; reniform large, kidney shaped, pale ringed, incompletely outlined inferiorly, where it is somewhat dark filled, outwardly pale marked; the cell between the ordinary spots is usually darker, sometimes black, and in such case in pale specimens a distinct, dark, median shade crosses the wing from that patch. From this complete maculation the variation is in the direction of obsolescence; the basal and t. a. lines are the first to go; then the t. p. line becomes indistinct, and the pale included space alone is sometimes seen crossing the wing; then this goes and only the s. t. line remains, and this is evident in all the specimens: the darker preceding shade is also permanent, but variable in intensity, while the terminal space may be either darker, concolorous, with, or paler than the ground color. The ordinary spots are always traceable, but vary in the line of obsolescence. The most strongly modified specimen is dark brown-red, with all save the s. t. line lost, the preceding shade very slightly marked, ordinary spots concolorous, the pale defining line very narrow. Secondaries in the ♂ soiled whitish, with a narrow dusky outer border; in the ♀ fuscous, Beneath powdery, primaries more reddish, secondaries whitish, no outer transverse line secondaries without distinct discal spot. Expands 1.25—1.40 inches; 31—35 mm.

Habitat.—Sierra Nevada, Cal. (McGlashan).

A large series of this interesting species is before me showing what I hope is the entire range of variation of the species which is a difficult one to place in a table by reason of its variability. It is very

close to what I have determined as *satis* Harvey, but differs in having no claviform, in lacking the gray powderings of primaries, in wanting the black defining lines to the ordinary spots, and in lacking the common transverse line of the underside; it is besides much larger than *satis*. From *rufula*, to which, also, it is allied, it differs in having the median space concolorous and the orbicular always complete. The species has all the structural characters of the *tessellata* group, and the ornamental characters are obvious in fully marked specimens; in those forms in which the cell is not at all darker between the spots confusion may result in an endeavor to place a single specimen from the synoptic table.

Types in the Rutgers College collection; coll. Hy. Edwards and coll. U. S. National Museum.

Agrotis basiflava sp. nov.—Deep dull luteous brown, with black powderings, varying to quite deep blackish brown. Collar concolorous, or sometimes head and collar paler, with a ferruginous tinge, and with a variably evident dark transverse line, less distinct in the pale specimen (♂), black in the dark specimen (♀). Primaries with basal space paler, the contrast most marked in the male. Basal line distinct, black, angulate, geminate. T. a. line distinct geminate, the inner line somewhat indistinct, but not obsolete, outer line black; the course very even and nearly upright from costa to internal vein, then with a long outward curve to inner margin. A faint diffuse and indefinite median shade from the dark shading between the ordinary spots. T. p. line evenly and not strongly curved over reniform, very slightly incurved below; the line is geminate, the inner crenulate, but not prominently so, the outer very even, included space concolorous, or (in the dark ♀) with ashen powdering. S. t. space not discolorous, but apparently a very little paler, with a series of somewhat triangular dark spots preceding the narrow, indefinite, pale s. t. line, which is very slightly sinuate. A row of blackish terminal lunules. No basal dash or mark. The costa is slightly paler, but not at all discolored or contrasting. Claviform distinct, but small, black bordered Orbicular inwardly oblique, oval, not complete superiorly, black margined, slightly paler; reniform of fair size, kidney shaped, not complete inferiorly, black margined and with a paler annulus; of the same color as the orbicular. The cell is darker, but not distinctly black between the ordinary spots. Secondaries smoky, paler, more yellowish in the male. Beneath dark, smoky; primaries with an outer line marked on costal space only; secondaries paler discally, with a small discal spot and an outer line, beyond which the margin is darker. Expands 1.16—1.20 inches; 29—30 mm.

Habitat.—N. W. British Columbia (Neumoegen).

This species belongs to the *tessellata* group, and is a close ally of *satis* and *rufula*. From the former it differs by the lack of pale powderings, the incomplete orbicular, the spots not powdered with yellow; it is a darker, somewhat shorter winged species, with the cell more definitely dark filled. From *rufula* it differs in the darker

color, and the lack of the distinct contrast between the median space and the basal and s. t. spaces. The orbicular is as in *rufula*, but the underside is much darker, with the maculation not marked.

Two specimens, ♂ and ♀ are before me, differing very decidedly in appearance. The male is paler, the maculation more distinct, and the pallor of the basal space is more evident. The female is darker throughout, the tendency along the costa and in the ordinary spots to a cinereous powdering, the contrast between basal and median space not well marked. The species is not a strongly marked one, but is distinct, I think; though most difficult to separate from the species above named, it really gives the impression, in the ♀ more especially, of *tessellata*. It cannot well be that species, however, variable as it is; the structural characters are like *tessellata* throughout.

Agrotis rena sp. nov.—General color varies from a very pale carneous gray to a distinct reddish gray, the change being rather one of intensity than color. Head and thorax immaculate, palpi dark at sides. Primaries with the maculation not strongly contrasting, transverse lines sometimes obsolete; in fully marked specimens basal line distinct, geminate, black; t. a. line very slightly outcurved, irregular, geminate, outer line blackish, broad, distinct, inner line faint and more even. T. p. line geminate, outer line punctiform, inner line narrow, crenulated, its course rather even, and not strongly outcurved over reniform; s. t. line pale, narrow, very slightly irregular, relieved by a distinct, dark, rather narrow, preceding shade. A narrow interrupted dark terminal line. This maculation may be wanting in part or entirely; one specimen lacks all but the merest trace of the t. p. line; usually the s. t. line remains distinct. Claviform small, incompletely outlined, in pale specimens entirely wanting. Orbicular large, round, slightly irregular, narrowly pale ringed, a black spot filling the space between orbicular and t. a. line, and another dusky shade filling the interval to the reniform the color of the included space is very slightly paler than ground color; reniform large, upright, kidney shaped, narrowly outlined in pale, with a leaden gray filling becoming blackish inferiorly. These ordinary spots are constant in the series examined though the distinctness varies, as does also the color of the filling between them. Secondaries soiled white to pale fuscous, the difference not sexual. Beneath, primaries fuscous powdery, pale at costa, with an outer transverse line visible only at costa, and a large discal spot; secondaries much paler, powdery, with a distinct outer shade line and large discal spot. Expands 1.25—1.32 inches; 31—33 mm.

Habitat.—Sierra Nevada, Cal. (McGlashan).

The series before me, by the kindness of Mr. Edwards, shows quite a long range of variation within comparatively narrow limits. There is little or no change in ground color nor in the relative position or course of the lines or spots, while the whole transverse maculation may be almost completely gone and only the ordinary spots remain. In structure it fully agrees with *tessellata* and *declarata*, and

with the latter of these species it is most nearly allied, being closest to the form described as *verticalis* by Mr. Grote. It differs essentially from this, however, in the shape of the ordinary spots, and especially in not having any contrast whatever between median and s. t. space—a marked feature in all the *declarata* forms. Judging from the number of specimens sent by Mr. McGlashan the species is not uncommon.

Types in coll. Rutgers College, coll. Hy. Edwards, and coll. U. S. National Museum.

Since the above was written I find two specimens referable to this species in Mr. Neumoegen's collection, marked California, without indication of special locality. In these the ground color is a luteous brown or reddish, with a faint gray shade over all, and the cell between the ordinary spots is more distinctly dusky. Otherwise the maculation is practically identical, and I cannot think that we have here a distinct species.

Agrotis tessellata Harr.

Several specimens were in the lot received from Mr. Edwards, all from the Sierra Nevada, Cal., and these I separated at first under the term *intrusa*. More careful comparisons and studies lead me to the belief that we have to do with a variety of *tessellata* merely, differing from the eastern form principally in a distinct reddish suffusion of the primaries, and an infusion of yellow into the secondaries. The cell between the ordinary spots is not so distinctly black in some specimens, and in these the median shade is somewhat more apparent, one specimen showing quite a strong resemblance to the *messoria* forms. The term *intrusa* may be used to denote this reddish powdered form with the ordinary spots pale and contrasting, the head and collar distinctly more reddish. The size and other characters resemble the type.

Specimens of this form labeled *intrusa* m. are in the coll. Rutgers College, coll. Hy. Edwards and coll. U. S. National Museum.

Agrotis spectanda sp. nov.—General color a rather bright luteous gray, with a glaucus tint over all. Head somewhat darker, with a considerable admixture of black scales. Inferior part of collar also dusky, limited by a distinct transverse black line, above which are white scales. The patagiæ are also somewhat darker and margined with black scales. Primaries very smooth in general color, the terminal space and costal portion of s. t. space darker, more powdery cell filled with black about the pale ordinary spots. Basal line black, geminate, distinct. T. a. line geminate, well marked on costa, incurved on costal vein,

thence slightly oblique outwardly to internal vein and along outward curve below. T. p line geminate, outcurved over reniform, then nearly parallel with outer margin; inner line narrow, crenulate, distinct, outer line even, much less evident. S. t. line narrow, pale, sinuate, marked by the darker terminal space. A series of black terminal lunules and a yellow line at base of fringes. Claviform moderate in size, concolorous, distinctly outlined in black. Orbicular moderate in size, slightly irregular, but hardly oblique, distinctly black ringed, and with a very narrow border of pale scales; reniform moderate in size, of the normal form, with a paler central line. Secondaries (♀) white, the veins dark marked. Beneath white, primaries somewhat smoky and with a trace of an outer line. Expands 1.32 inches; 33 mm.

Habitat.—California (Neumoegen).

A single female only of this pretty and sharply defined species is at hand. It has all the appearance and structural peculiarities of the *tessellata* group; the white secondaries of the ♀ ally it with *pallipennis*, while the maculation of primaries is much more like *albipennis*, or even *declarata*. Some cleanly marked specimens of *tessellata* resemble this species, but the white secondaries are always distinctive. Had the specimen been a male the white secondaries would not have been so important, as the female may have dusky secondaries when those of the ♂ are white; the reverse, however, is never the case within my experience.

A. nostra sp. nov.—General color a somewhat luteous brown, varying a little in shade. Sides of palpi darker, the front sometimes with dark scales. Collar with a somewhat faintly marked median transverse line. Thoracic tuftings gray tipped, sometimes the entire thorax somewhat darker in shade than the ground color. Costal region powdered with gray, more broadly at base, terminal space blackish, not greatly contrasting, and somewhat variable in the amount of the dark shading; on apical blotch gray powdered. Basal line present, geminate, not well marked. T. a. line geminate, very slightly oblique, with a distinct outward curvature in the interspaces; the line is sometimes barely traceable, and the two parts are generally equally distinct. T. p. line nearly parallel with the outer margin, the inner line finely crenulated, outer line reduced to a row of small venular dots which are sometimes wanting; sometimes the entire line is scarcely traceable. S. t. line irregular, concolorous, marked only by the dusky terminal space and by a vague preceding shade; a series of small terminal lunules. Claviform indefinitely outlined, concolorous. Orbicular oval, of good size, black ringed, gray powdered; reniform large, kidney shaped, narrowly black ringed, concolorous or slightly paler, somewhat leaden filled inferiorly. The spots are always distinct, but somewhat variable in point of definition, sometimes incompletely outlined. The space between the spots is darker, but never black or prominent. One specimen shows a black spot preceding the orbicular, and another has the entire maculation obscured, the ground color paler than normal. Secondaries smoky fuscous, the veins

darker, discal lunule of underside visible. Beneath powdery fuscous, with a discal spot on all wings, and a variably distinct outer line. In one specimen the line is wanting entirely. Expands 1.50—1.60 inches; 38—40 mm.

Habitat.—Sierra Nevada, Cal. (McGlashan).

This species is allied to *basalis* Grt. and *solitaria* Smith, having all the structural characters of the *tessellata* group. In superficial appearance it strongly resembles *saucia*, and I am very sure I have seen the species mixed with *saucia* in collections. The tuberculate front and the structure of the antennæ will serve to distinguish the present species at once. It has the wing form of *saucia* rather than *tessellata*, and by this character and the dusky terminal space bears some resemblance to the *cinereomaculata* form of *ochrogaster* Gu.

The species seems tolerably common judging from the number of specimens sent.

Types in the Rutgers College collection, coll. Hy. Edwards, and coll. U. S. National Museum. Mr. Neumoegen also has specimens in his collection.

Agrotis furtivus sp. nov.—Ground color varying from fuscous gray to bright red-brown. Head and thorax evenly concolorous, collar with a central black, transverse line. Primaries with costal space to t. p. line pale, discolorous, in the brown specimens most prominently so. Basal line wanting, at all events not traceable. T. a. line usually obsolete, in one well marked, brown specimen traceable as a pale, outwardly oblique line without definite margins, and angulate in the interspaces. T. p. line geminate, rather even, pale, outcurved over the cell and slightly incurved inferiorly; inner part of line usually distinct, outer part not well defined; in some specimens the line is not traceable below the costa. S. t. space darker costally, a distinct dark shade and a series of sagittate blackish spots preceding the narrow, pale, and slightly irregular s. t. line, terminal space darker than ground color. In a brown specimen with well marked t. p. line the s. t. is decidedly paler than the median space, and this is the case to a variable extent where the t. p. line is marked. A black basal dash interrupted by the t. a. line, the small loop-like claviform continuing the dash beyond the line; this spot is very variably distinct, but usually not completely outlined; cell around the ordinary spots dusky to black. Orbicular variable in shape, always open superiorly, V-shaped to oblong, oblique, the change being made by cutting the outer horn of the V; in color like the costal region; sometimes with a darker centre; reniform moderate in size, kidney shaped, white ringed, the centre concolorous with costa, or somewhat darker. Secondaries smoky fuscous, with a variably evident discal lunule. Beneath powdery, with a very variable, distinct, outer line, and a more uniformly defined discal spot to all wings. Expands 1.38—1.50 inches; 35—38 mm.

Habitat.—California (Neumoegen).

Three very strongly dissimilar specimens, all females. The species is most nearly allied to *idahoensis*, differing principally in the very distinct shade containing still darker sagittate spots preceding the s. t. line, which is less dentate than in its ally. The variations have been indicated in the description. The structural characters are of the *tessellata* group.

Agrotis infelix sp. nov.—General color red-brown, varying in shade. Head and collar inferiorly either gray or yellow, with a ferruginous admixture, contrasting; a black transverse line across the middle of the collar limits the pale space superiorly, and above this line the collar is concolorous with thorax. Thoracic disc in the specimen even, concolorous; in another the entire color is darker, the tuftings are gray tipped, the patagiæ with gray powderings and margined with black. Primaries with costal region discolored yellow, with a ferruginous or an ash-gray powdering, gradually merging into the ground color before the inception of the t. p. line. Basal line whitish, loop-like, cutting a disk out of the basal black streak. T. a. line visible only in the s. t. interspace, where it crosses the black basal dash in the form of an outcurved pale line margined with deep black. T. p. line narrow, single, finely crenulated, slightly outcurved over reniform, thence very evenly parallel with the outer margin. This in the ♀; in the ♂ no trace of the line is visible. In the ♂ the color is even unbroken through the median and s. t. space to the s. t. line, which arises from a gray apical spot and is punctiform and very slightly irregular, the spots preceded by sagittate black dashes; beyond this line the narrow terminal space is slightly more dusky, and there is a row of small black terminal dots; in the ♀ a grayish suffusion along the black marked veins relieves and lightens the s. t. space, intensifies the black sagittate dashes and makes the terminal space darker by contrast; the maculation, otherwise, is as in the ♂, save that the s. t. line is more evident and some of the spots are connected, showing that the line is distinctly dentate on veins 3 and 4. Claviform distinctly black margined, variable in size and form, center concolorous, surmounted with an also variable pale, yellowish streak, crossing the median space. Orbicular oval, oblique, complete, black ringed, then with a pale annulus, centre of the color of costal region; reniform large, kidney shaped, contrasting yellowish, inferiorly dark grayish marked. In the ♀ the entire internal margin is gray marked. Secondaries evenly fuscous, with a row of terminal darker lunules, fringes paler. Expands 1.65—1.80 inches; 41—45 mm.

Habitat.—California (Neumoegen).

This handsome and well marked species comes nearest to *obeliscoides* in the *tessellata* group, but is perhaps more nearly allied to *perexcellens* of the *qudridentata* group. From the latter it is distinct by the lack of the prominent dentations of the s. t. line; from the former by its very much larger size, the more produced primaries, different s. t. line and other details of maculation. The line of va-

riation is in the same direction as in *perexcellens*, the two specimens before me showing strong differences, while evidently referring to the same species.

Since the above was written I have seen a series in the United States National Museum which runs from the form above described to a uniform *black* the maculation scarcely identifiable. The series is bred, so there is no question as to the identity of the specimens.

Since the mss. of the above descriptions was handed in, I have deposited a series of types in the collection U. S. National Museum, which contains nearly all of the species above described. The collection now contains more than seventy-five per cent. of all the described species of *Agrotis*, and in generally finer series than any individual collection known to me.